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Commission*

Governments
Publication



ANNUAL REPORT

1917



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ANNUAL REPORT
— OF THE —
Harbour Commissioners
of Montreal

For the Year 1917



COMMISSIONERS
W. G. ROSS, Esq., President
FARQUHAR ROBERTSON, Esq. Brig.-General A. E. LABELLE

OFFICIALS

M. P. FENNELL, JR., SECRETARY-TREASURER

F. W. COWIE, M. INST. C. E., CHIEF ENGINEER

SIR JOHN KENNEDY, CONSULTING ENGINEER

T. W. HARVIE, ASSISTANT CHIEF ENGINEER

J. NEHIN, GEN'L SUPT. OF GRAIN ELEVATORS

GEO. GENDRON, MECHANICAL SUPERINTENDENT

CAPT. T. BOURASSA, HARBOUR MASTER

CAPT. J. F. SYMONS, DEPUTY HARBOUR MASTER

GEORGE E. SMART, COMPTROLLER

ROBT. A. EAKIN, PAYMASTER AND WHARFINGER

J. VAUGHAN, SUPT. OF RAILWAY TERMINALS

R. L. MERCIER, ASST. SUPT. OF RAILWAY TERMINALS

L. H. A. ARCHAMBAULT, PURCHASING AGENT

Harbour Commissioners of Montreal

MONTREAL, March 1st, 1918.

To the Hon. C. C. BALLANTYNE,
Minister of Marine and Fisheries,
Ottawa, Ont.

Sir,—

In compliance with Section 51 of the Commissioners' Act 57-8 Victoria, Chapter 48, the Harbour Commissioners of Montreal herewith respectfully submit their Annual Report of Operations for the year ended 31st December, 1917.

We have the honour to be,

Sir,

Yours very respectfully,

W. G. ROSS, President.

F. ROBERTSON,

A. E. LABELLE,

Commissioners.

Harbour Commissioners of Montreal

ANNUAL REPORT—1917

FOREWORD

It will be seen by the present Annual Report of the Harbour Commissioners of Montreal that the construction programme, which reached a maximum in 1912, was reduced during the past year to the lowest in many years, in order to comply with the wishes of the Government.

On the other hand, the number of transatlantic vessels which arrived at the Port of Montreal in 1917, viz., 579, was greater than that of any other year in the history of the Harbour. The falling off in the number and tonnage of coasting and inland vessels has been to a large extent made up by an increase in railway traffic.

The gross revenue of the Port, as shown in the Financial Statement, is also larger than ever before reached, increasing from \$498,661.12 in 1907 to \$1,850,646.93 in 1917.

The following table, taken from the Annual Report of the Montreal Board of Trade of 1917, as to Exports and Imports, shows a phenomenal increase in the trade of the Port:—

TABLE OF THE TRADE OF THE PORT OF MONTREAL

Years	Trans-Atlantic Vessels arrived in Port	Total Tonnage	Value of Merchandise Exported	Value of Merchandise Imported	Total Foreign Trade
1917	579	1,984,233	\$534,876,677	\$214,885,029	\$749,761,706
1916	569	1,965,161	382,741,463	194,924,348	577,665,811
1915	484	1,657,728	155,685,953	115,919,977	271,605,930
1914	551	2,039,133	119,478,589	140,591,066	260,069,657
1913	477	2,020,333	99,398,102	154,485,087	253,883,189
1912	409	1,775,487	87,679,422	148,977,605	236,657,027
1911	401	1,695,613	71,254,446	129,811,810	201,066,256
1910	411	1,658,414	71,642,648	114,473,845	186,116,493
1909	371	1,436,963	76,474,485	96,787,938	173,262,423
1908	364	1,315,688	80,583,171	79,851,814	160,434,985

The following figures of the general commerce of the four largest Atlantic ports with which Montreal actively competes are given for the year 1916, as follows:—

New York:

Value of Imports.....	\$1,191,865,982
Value of Exports.....	2,332,286,213
	<hr/>
	\$3,524,152,195
	<hr/>

Port of Montreal:

Value of Imports.....	\$ 194,924,348
Value of Exports.....	382,741,463
	<hr/>
	\$ 577,665,811
	<hr/>

Boston:

Value of Imports.....	\$ 210,900,243
Value of Exports.....	131,229,946
	<hr/>
	\$ 342,130,189
	<hr/>

Philadelphia:

Value of Imports.....	\$ 95,801,175
Value of Exports.....	193,495,296
	<hr/>
	\$ 289,296,471
	<hr/>

Baltimore:

Value of Imports.....	\$ 27,808,916
Value of Exports.....	180,703,374
	<hr/>
	\$ 208,512,290
	<hr/>

The Port of New York, through which about 80 per cent of the Atlantic foreign trade passes, is preparing a scheme of development and a programme of construction never before equalled. The organization of the New York and New Jersey Port Commission, which, it is intended, will carry out extensive improvements along the Greater New York water front, have under consideration, it is reported, plans for improvements costing \$500,000,000. It is stated that the new Port Commission will proceed without hesitation, with a view to the development and construction of a terminal which will include a system for interchange of freight and for the construction of warehouses and floating equipment second to none in the world. Unification and co-ordination of transportation systems with terminal facilities is, at all important links, being taken up as an imperative duty.

Boston, Philadelphia, Baltimore, Jacksonville, New Orleans, and Pacific ports are all spending large sums of money to improve their port conditions. These seaport cities are constructing large warehouses with a view to releasing space in factories and the storing of manufactured products while assembling cargoes waiting for arrival of vessels.

Definite steps towards an after-the-war shipping policy are also being taken by British, American, and French steamship interests.

A powerful American company has organized plans for placing one hundred large steel barges in operation on the new canal between Buffalo and New York, with a view to handling 75,000,000 bushels of grain per annum, and will be another factor in the further diverting of Canadian grain through United States ports.

It is reported that it is now being recognized at Washington

that New England should have a unified railway system reaching the West through Canada.

The standard ship, as being constructed in America, the United Kingdom, and even Japan, is a cargo carrier exactly suited to navigable conditions in Montreal Harbour and its approach from the sea.

The immediate urgent needs would appear to the Harbour Commissioners of Montreal to be the immediately proceeding with the following:

1. Warehouses for the relief of cars and for the assembling of goods waiting for arrival of ships.

2. Railway terminals, which, in the Harbour of Montreal, should be immediately doubled.

3. Industrial sites along the Harbour front for assembling and erecting of articles from inland factories.

4. Urgently aiding the development of shipbuilding in the Harbour of Montreal similar to the successful developments on the rivers at Glasgow and Newcastle-upon-Tyne.

Canada has a wonderfully cheap asset in Montreal Harbour. The total cost, twenty-eight million dollars, is represented by:

80 to 90 berths from 350 up to 750 ft. in length, with depth of water 20 to 35 ft.

35 of these berths are modern concrete wharves of a lasting character, built in the past few years.

Two large modern fireproof elevators with conveyor system to 15 steamship berths.

21 permanent fireproof transit sheds.

50 miles of railway Harbour terminals.

Complete construction plant and organization.

About 200 acres of land, situated in the most valuable position industrially, in Montreal, have been reclaimed.

At what other port in the world could such valuable accommodation be shown created at such low cost ?

At the present time the Harbour Commissioners have the plant, machines, and organization for continuing economical construction work.

In view of the above, and that while the Atlantic ports of the United States are vigorously improving their facilities for present and for after-the-war business, the progressive development of the Port of Montreal should be vigorously carried on.

INTRODUCTION

The Future Success of the Harbour of Montreal

A review of the Annual Reports of the Harbour Commissioners of Montreal and other historical and statistical information will convince the investigator that Montreal Harbour has been successful in the past.

Although subject to the closest competition, the St. Lawrence route has held its own at various stages, since the opening of the Erie Canal in 1835, in the competition between the Buffalo-New York rail and water routes and the lake, water and rail routes to Montreal.

The Government of Canada by a wise and skilful canal policy and by its splendid work in improving the River St. Lawrence Ship Channel has, with the development of the Harbour of Montreal, made successful competition possible.

Much of the success is due to continued effort; much of it is due to the physical position of Montreal on the East-and-West route from the productive areas in North America to Europe.

Montreal cannot be eliminated from a commanding position in connection with transportation, East and West, if its organization and facilities are kept up to the quite possible requirements.

The round trip by cargo vessel from Europe to Montreal and return in Summer can be accomplished in a shorter time than to the Port of New York. The short open ocean route and the beautiful St. Lawrence voyage are becoming more and more appreciated as the steamship services are increasing and improving. The northern route in Summer is climatically extremely advantageous for the condition in which many

freights are carried. The River St. Lawrence has been improved by the Canadian Government until the route is now accepted as safe. The facilities in the Harbour of Montreal have been designed and constructed so as to provide for a quick turnover of the cargoes and the despatch of vessels. The Harbour is convenient to the city, to the railway terminals, and to the labour market. The various railways have convenient and quick access to the Port and to Port terminals, which are commodious and convenient for handling railway business. The successful Canadian Eastern and Western transportation routes all pass through Montreal.

Situated in Montreal are accessories necessary for a successful Port. A large floating dock with a splendidly equipped shipyard is available. The Montreal city and district possesses most variously equipped shops for all classes of construction and repairs, as may be required. As a terminal point for ocean navigation and for navigation from the Great Lakes it is admirably adapted for the interchange of freights from inland to ocean transport.

Montreal does and can compete for Canadian East and West traffic, and she will even more successfully compete in the future for the great Western traffic which is so rapidly developing, and it is hoped that instead of the bulk of the export Canadian grain production being shipped by the Buffalo route, it will, in the near future, be carried over Canadian transportation lines and through Canadian ports.

In order to hold present success and to gain the trade of the rapidly expanding West, Montreal must continue to provide the necessary facilities and to maintain the Harbour Terminals as an economic point of transfer for freights.

The purpose of these remarks is to demonstrate that the transportation problem is one of the most important questions

touching the present and future development and prosperity of Canada, and that Montreal Harbour, properly developed and equipped, is a key to competitive success. The value to the Canadian and British interests of retaining the transportation of Canadian products within the borders of the Empire is too great to be easily realized. The simple statement of the results estimated in dollars and cents does not tell the whole story.

FUTURE IMPROVEMENTS

For future success in Montreal Harbour what are the immediate as well as the ultimate necessities ?

It has been shown again and again that as a public work, Montreal Harbour has fulfilled its functions financially and has been at least as successful a factor in the interests of Canada as any other Government or public organization.

It would follow, therefore, that in addition to earnest endeavours being made to provide for the present war-time necessities and to prepare for the future, immediate and urgent work in Montreal Harbour should not completely stop. To save a day, and much more so, to save three or four days, in the time occupied by an ocean steamer for the round voyage to America and return, would be to increase that ship's usefulness by almost one voyage per annum. This would be a splendid achievement in this critical time of tonnage requirements.

Equally valuable would be the release, due to the shorter rail haul and the non-congested terminals, of loaded railway cars which are so urgently required in the various transportation movements and in connection with the general desire to lower the price of food commodities and fuel.

It has been demonstrated that, during the seven months open season in Montreal, ships have been cleared from the Port with such expedition that a gain of from two to four days over other Atlantic ports is the rule, and frequently much more. The reason for this is that a concentrated, highly developed unit of port accommodation has been supplied in Montreal Harbour.

The immediate requirement as well as the ultimate necessity is to enlarge this developed area so that cargoes may be assembled in proper and convenient berths for speedy loading, so as to give the required despatch to vessels.

The Harbour Railway Terminals of Montreal are a factor which the people of Canada have not sufficiently appreciated. The whole of the foreshore on both sides of the river, from above Victoria Bridge down to the foot of the Island of Montreal, is included within the limits of the Harbour. These foreshores are ideal for the development of the Harbour Railway Terminals.

The development of these terminals is an advantage not only to the Harbour and to the marine interests, but it is also an advantage to the various railway companies, and it has been found that when satisfactory facilities are given, all interests are glad to pay a reasonable charge for a satisfactory service over these terminals.

The St. Lawrence route in Canada was first in the field. It can and must hold its own.

NEW YORK STATE BARGE CANAL COMPETITION

One State—New York—has been willing to spend \$130,000,000 to \$150,000,000 in an attempt to obtain the transportation of Western products to the State and Port of

New York. Would the thrifty people of that State have assumed the obligation if the old Erie Canal or their splendid system of railways were able to hold their own with the Canadian Route via the Port of Montreal ?

The following statement is taken from the New York State Barge Canal Bulletins:

The Barge Canal

“These canals occupy one of the most important, if not
 “the most important, locations in the country—in peace
 “and war. They join the ocean and the vast area tributary
 “to our great inland seas * * * and in addition, these lakes
 “are the logical outlet of an immense grain belt which lies
 “to the West a million and a quarter square miles in extent,
 “and producing annually five billion bushels of grain.

“The Canal Board made a further recommendation, viz.,
 “to build a grain elevator at one of the chief canal terminals
 “in New York City. * * * If the Federal Government should
 “erect an elevator of ten million bushels capacity, there is
 “no doubt that it would be amply repaid by the results
 “obtained.

State Regulation of Joint Rail and Water Routes

“At large expense, the State has constructed an adequate
 “and modern waterway. It has built public terminals at
 “important localities and is equipping these terminals with
 “efficient freight handling machinery. For shipments which
 “can be made wholly by water, complete legislative enactment
 “has been made.

.....

"But traffic is not all of this character. Much freight, "to take advantage of water carriage, must travel part way "by rail.

"During the 1917 session of the Legislature there was "enacted a law which should go far in bringing to the Barge "Canal the commercial success which an enterprise of its "magnitude deserves.

.....

"Its purpose is to extend the authority of the Public "Service Commission so as to include supervision over "traffic wholly within the State, which may utilize through "routes that are partly by water and partly by rail.

"Barring unforeseen difficulties, the Barge Canal will be "thrown open to navigation in the spring of 1918."

The competition of the New Barge Canal from Buffalo to New York will then recommence, and again Canadian shippers and transportation interests will require to renew their efforts and increase their efficiency.

If it is worth while for the taxpayers of the State of New York to make urgent endeavours to secure this business, it is not a time for Canadians to relax every possible effort.

THE GUARDING OF THE HARBOUR

The Harbour Commissioners, the Director of Overseas Transports, the shipping interests, and all citizens of Montreal should join in appreciation of the work of the Military Guard, under Lieutenant Stalker, and the Montreal Fire Department, under Chief Tremblay, for the freedom of the Harbour from much of the trouble which has been so general in many other ports.

The guarding of the central part of Montreal Harbour has been taken care of by the Commissioners' efficient Harbour Police system, and other methods of protection.

The Military Authorities undertook the work of guarding the Harbour, both in connection with the sheds and the Harbour generally. By day and night an efficient military guard was maintained, while an armed patrol was maintained on the Harbour Commissioners' tug "Sir Hugh Allan" throughout the summer.

CONFERENCES

Shipments of Canadian Products through Canadian Ports

In February, 1917, the Harbour Commissioners of Montreal suggested to Sir George E. Foster, Minister of Trade and Commerce, the advisability of a conference with a view to the organization and mapping out of ways and means of transportation of Western products of grain and flour through Canadian channels and lines of transportation through Canadian ports.

The Minister of Trade and Commerce agreed to the suggestion and called a conference at Ottawa for March 19th, 1917.

Before proceeding to Ottawa, Mr. W. G. Ross and Mr. F. W. Cowie held conferences with the General Managers of the various transportation companies.

The transportation companies frankly admitted that they would not be in their usual good physical condition for handling large quantities of grain or other Western products. The labour situation was critical; the coal situation caused a great deal of anxiety; and without doubt, they had to concentrate their equipment on the shortest hauls and the most urgent freights.

The conference held at Ottawa was presided over by Sir George E. Foster, Minister of Trade and Commerce. There were also present the Honourable Frank Cochrane, Minister of Railways and Canals; the Honourable Dr. Reid, Minister of Customs; Sir Henry Drayton, and representatives of all the Canadian transportation and grain interests.

After a thorough discussion, in which was brought out the possibilities of transportation and the facilities at various points of transshipment, it was agreed that the railway companies and marine interests would deliver to Montreal Harbour export freight at the rate of 650 cars per day.

The Harbour Commissioners, on their part, undertook to take care of that amount without congestion, and to devote every possible facility for despatch of business through the Port.

EXPORT BUSINESS

During the months of May and June, 1917, export business arrived in the Port of Montreal by railway and water fairly regularly, although not up to the amount agreed upon at the Ottawa conference.

The amount of business did not congest the Harbour accommodation; the railway terminals were not taxed to their fullest extent; the grain was freely unloaded from the cars and the Harbour transit sheds were not filled to their utmost, while various outlying berths and accommodation were not used to their capacity.

In July, and for the balance of the season, the business fell off very considerably. In May the grain received at the Harbour Commissioners' Elevators amounted to 8,508,000 bushels.

In June the total amount was 7,676,000 bushels.

In July the quantity fell off to 5,834,000 bushels.

In August it amounted to only 3,226,000 bushels.

In September, 2,446,000 bushels.

In October, 3,379,000 bushels.

In November, 4,554,000 bushels.

In spite, therefore, of the efforts of the Harbour Commissioners and of agreement by the transportation companies as to transportation, the export business of Canadian products through the Port of Montreal was a serious disappointment.

It was reported that the diversion to Atlantic ports was due to American financing of purchases and to their directions as to shipments.

FUEL OIL SHIPMENTS

One of the new developments in connection with the Port of Montreal and the industrial situation adjoining the Port may be instanced by the fuel oil shipments from the Port of Montreal during the season of 1917.

The Imperial Oil Company in 1915 commenced the installation of a plant at Pointe-aux-Trembles, the Harbour Commissioners at their request constructing a special wharf for this industry, and agreeing to build the river front railway line down to the site as soon as possible.

The company built a large storage and refining plant covering a large area of land, and it was expected that the Montreal plant would be a link between the Western and Maritime plants.

During the season the question of shipment of oil overseas in merchant vessels was taken up. Sir Frederick Black, Fuel Expert from the British Government, visited Montreal in August in connection with this work, and after his visit the organization was completed, so that during the balance of the season this new enterprise was carried on regularly. In order, however, to link up this industry with the Harbour, the completion of the railway is urgently required.

DOMINIONS ROYAL COMMISSION

A most important document in connection with transportation and trade was issued early in the Summer of 1917, viz., the Final Report of the Royal Commission on the Natural Resources, Trade and Legislation of Certain Portions of His Majesty's Dominions.

The Dominions Royal Commission held sittings in Montreal in 1916. The Harbour Commissioners presented a statement giving the salient features regarding the development of the Harbour of Montreal, its facilities for business, and outlook for the future.

The Commission presented in their Final Report many interesting and instructive facts relating to Canada, her ports, transportation routes and trade organizations generally, and a few extracts are given herewith as being essentially worthy of careful note.

CANADA

Yield of Crops (p. 18)

"Of the grain crops of Canada, wheat is unquestionably
 "pre-eminent. The average production in the Dominion for
 "the years 1910-1914 was 196,000,000 bushels, and the average
 "exports of wheat and flour 96,800,000 bushels per annum.

"Of the total production, the three great Provinces alone,
 "Manitoba, Saskatchewan, and Alberta, produced an average
 "of 174,000,000 bushels per annum. According to a recent
 "return, only 9,500,000 acres out of a total of 58,625,000 acres
 "of occupied farm lands were under wheat in these three
 "provinces, and these occupied farm lands formed only 21
 "per cent of the possible farming lands in these provinces.

"At the present time, Canada stands fifth in the list of the
 "wheat-producing countries. It is difficult to see why, in

“years to come, she should not be first among the countries
 “of the world in the amount of her exportable surplus of
 “wheat, if not in total production. If by the development
 “of new routes and if by the improvement of old routes,
 “such as the St. Lawrence River, the cost of the transport of
 “wheat from the great Prairie Provinces of Canada to the
 “markets of the United Kingdom can be reduced, the problem
 “of feeding the industrial masses of Great Britain will be more
 “than half solved.”

HARBOURS AND WATERWAYS OF THE WORLD

Recommendations (p. 117)

“Hitherto, as we have shown, the harbour engineer and
 “the naval architect have each pursued a solitary path, and
 “there has been little correlated effort.

“Thus engineers, in designing new harbour works, have
 “had to depend upon such information as could be obtained
 “from shipowners and upon their own judgment, based on the
 “growing dimensions of ships, which, indeed, have steadily
 “exceeded current expectation. Naval architects, on the
 “other hand, have contented themselves with urging the
 “provision of harbour accommodation for larger and still
 “larger vessels.

“It is in our view essential that, in future, all schemes of
 “improvement for certain ports on the great trade routes
 “should be submitted to the Imperial Development Board,
 “whose creation we advocate elsewhere in this Report, so
 “that the Board may advise, in the light of the best expert
 “opinion obtainable, whether these schemes provide for the
 “future reception of vessels of the length and draught required
 “for the cheap and speedy transport of the Empire’s merchan-
 “dise.

“We do not in any way suggest that the Imperial Development Board should advise on, still less that it should interfere with, details of construction, equipment, etc. These are clearly matters for local consideration and settlement.

“Our sole object is to secure that Imperial as well as local requirements may be jointly considered in the future.”

Development of Imperial Routes (p. 121)

“We suggest that the Governments concerned should so arrange matters that in 1921, when the time for giving notice in respect of the latest of the mail contracts expires, they may be ready to initiate new Imperial services.

“During the intervening period, as we have already suggested, the authorities concerned should occupy themselves in deepening selected harbours on the routes.

“During the intervening period also, tenders should be invited for the maintenance of new services:—

“(a) of 18 knots (sea speed) on the route from the United Kingdom to Australia, via the Cape of Good Hope;

“(b) of 18 knots (sea speed) on the route from Western Canada to Australia, via New Zealand, with a branch service from Fiji to New Zealand as an alternative, to connect with a trans-Canada service and one across the Atlantic;

“(c) of 20 knots (sea speed) from the United Kingdom to Eastern Canada.”

The Commission showed their particular interest in the success of the Port of Montreal by their enquiry into the construction and operation costs of the Port. They closely investigated the possibility of a port being successful, without the imposition of any tonnage dues on vessels, and they closely enquired into the traffic upon which the various revenues of the Port of Montreal were maintained.

They found that ten years ago, in 1906, the capital interest bearing cost of the Port of Montreal was some \$9,000,000, and that the yearly revenue of that time was \$388,000, of which \$361,000 was from wharfages on goods. In 1916 the debenture debt had increased to \$26,500,000 while the wharfages on goods had only increased to \$417,000. Only the new policy, i.e., the operation of the new facilities, the great grain elevators and the giving of a good service, made it possible for the Harbour Commissioners to pay their way during the last ten years.

VISITORS TO THE PORT

His Excellency the Duke of Devonshire, Governor-General of Canada, made a special visit to Montreal to inspect the Port on October 10th. His Excellency was accompanied by Captain Kenyon-Slaney, A.D.C., and was met at the Windsor Station by the Harbour Commissioners: Mr. W. G. Ross, President; Brig.-Gen. A. E. Labelle and Mr. Farquhar Robertson, Commissioners. A number of gentlemen actively interested in the Port of Montreal were invited to accompany the inspection party: Hon. C. P. Beaubien, A. H. Harris, Major-General E. W. Wilson, W. H. Lynch, F. E. Meredith, K.C., James Carruthers and Sir Thomas Tait.

Arriving at the Harbour sheds, operated by the Director of Overseas Transports, His Excellency was received by a Guard of Honour made up from the 1st Depot Battalion, 1st Quebec Regiment. His Excellency not only visited all the sheds and elevators, but he travelled the whole length of the Harbour railway and inspected the accommodation and equipment of the Harbour in its fullest details.

After luncheon on board the tug "Sir Hugh Allan" an hour was spent at the plant of The Canadian Vickers Limited, Maisonneuve, and afterwards the party were brought back to the foot of the canal.

His Excellency expressed a most satisfactory opinion of the Harbour and its facilities.

On October 30th, Lieut.-Col. the Honourable C. C. Ballantyne, recently appointed Minister of Marine and Fisheries, accompanied by Mr. Alex. Johnston, Deputy Minister, the Harbour Commissioners and officials, made an inspection of the Harbour. The Minister, who had been a member of the Harbour Commission for several years, and thoroughly acquainted with all the details of the Port, was much interested in the operation of the various units of equipment, which had been installed during his and the present Commissioners' regime in the Harbour. An inspection was made of the plant of the Canadian Vickers, Limited, when a steam trawler was launched. The trip included an inspection of the newly constructed railway lines down to Pointe-aux-Trembles and the Port in general.

Honourable J. D. Hazen, ex-Minister of Marine and Fisheries, and recently appointed Chief Justice of New Brunswick, was the guest of the Harbour Commissioners on November 8th, 1917.

Mr. Hazen, after his several years of administration as Minister of Marine and Fisheries, expressed his regret at leaving his connection with the great work of improving and advancing the facilities in the Harbour of Montreal, and expressed his great hopes for the future.

CANADIAN VICKERS LIMITED NAVAL CONSTRUCTION WORKS

The foresight of the Harbour Commissioners in 1909, one of whom was Colonel the Honourable C. C. Ballantyne, now Minister of Marine and Fisheries, in obtaining for the Port of Montreal a Dry Dock of modern dimensions and ship

repairing plant, has again been shown by the successful activities of the Canadian Vickers Limited in 1917.

The location in Montreal of the works as originally intended has added a necessary and successful adjunct to the Port.

The enterprise and skill of the company in preparing for and branching out into urgently necessary shipbuilding construction is worthy of the congratulation of all Canadians.

It may be pointed out that the Harbour Commissioners of Montreal have a share in this splendid enterprise. The site, some 36 acres of splendid land, entirely cut off from access or interference, has all been re-claimed from the river. Just outside the limits of the shipyard, the Harbour Commissioners have a large and commodious railway terminal. The railway facilities and connections with the shipyard are, therefore, of the very best.

In addition to the land area, the Harbour Commissioners built and own the 2,200 feet of permanent deep water quays, all of which are leased to the company with the site. These quays give the shipbuilding company berths for a large number of vessels while being repaired and fitted out.

Scenes at the fitting-out berths in 1917 were interesting in the extreme. At times there were from 10 to 20 vessels under construction and repair, and the cheerful, efficient staff of construction workers gave daily proof that they were doing their best in their own line to win the war.

The labour situation in Montreal is another feature which added to the success of this plant. The adaptability of the Canadian workers is to be noted. With the leadership of skilled and experienced men from the old British yards, they soon learned the game and became exceedingly efficient.

It has been a matter of remark to many skilled visitors that the construction and repair staff of Canadian Vickers is so well balanced and handled. The following splendid record

of construction and repair work during 1917 has been supplied, for the information of the Harbour Commissioners, by The Canadian Vickers Limited:—

Built and delivered 12 submarines for Allied Governments.

Built nine steel trawler hulls and installed machinery and boilers supplied to Messrs. Vickers.

Built 8 steel trawlers complete with machinery and boilers.

Built 26 wooden drifter hulls.

Installed machinery and boilers in 16 drifters.

Built and launched one 7,000 ton cargo steamer.

At the close of the year Messrs. Vickers had contracts for five more 7,000 ton cargo steamers, some of which were in course of construction.

The following ships were docked and repaired:—

"Valodia."	"Colonia."
"Scandinavian."	"Arracan."
"Cape Corso."	"Flavia."
"Cadillac."	"Souk-Ahras."
"Ionic."	"Drifter CD-75."
"Submarine H-8."	"Minnesota."
"Nevada."	"Thiepval."
"Rapids King."	"Knut Hamsun."
"Montcalm."	"Northern Queen."
"Prince Edward Island Car Ferry."	"S.N.A. 4."
"Syracuse."	"Drifter CD-89."
"Nascopie."	"Scandinavian."
"Singapore."	"Cadorus."
"T. J. Drummond."	"Briton."
"Syracuse." (2nd time.)	"Drifter CD-93."
"Prince Edward Island Car Ferry." (2nd time.)	"German."
	"Dredge No. 16."

Representing considerably over 100,000 gross tons.

In addition to these, several vessels were repaired afloat in the Harbour.

MONTREAL HARBOUR AS A SHIPBUILDING CENTRE

The Canadian Vickers Limited was projected in 1909. The first construction work for the reclamation of land commenced in 1910. Nothing existed which could be used until 1913. The splendid record of Canadian Vickers for 1917, as given above, is, therefore, the more remarkable.

Montreal, as a shipbuilding centre, has the following permanent advantages:—

1. It is at the head of ocean navigation and the foot of the St. Lawrence Canal System.
2. It is the Canadian centre of finance and industry.
3. It has a splendid labour market.
4. Montreal possesses splendid manufacturing plants for all auxiliary parts required in shipbuilding and repair work.
5. The connection with the Harbour Commissioners' Port and Railway Terminals is an advantage in the prompt despatch and economy, which is in itself an important feature of success.

The Harbour Commissioners of Montreal, in 1917, were in conference with several shipbuilding firms, and favourable arrangements as to sites along the river front at various places were discussed. It is considered that the day is not far distant when shipyards will be established along the banks of the river, one adjoining the other, between Canadian Vickers' plant and Pointe-aux-Trembles, similar to the successful shipyards on the Clyde.

SEASON OF NAVIGATION 1917

Navigation in Montreal Harbour for the year 1917 opened on April 19th. Harbour tugs cleared the basins of ice and the ferry steamer "Louis Philippe" took her station at Longueuil Ferry.

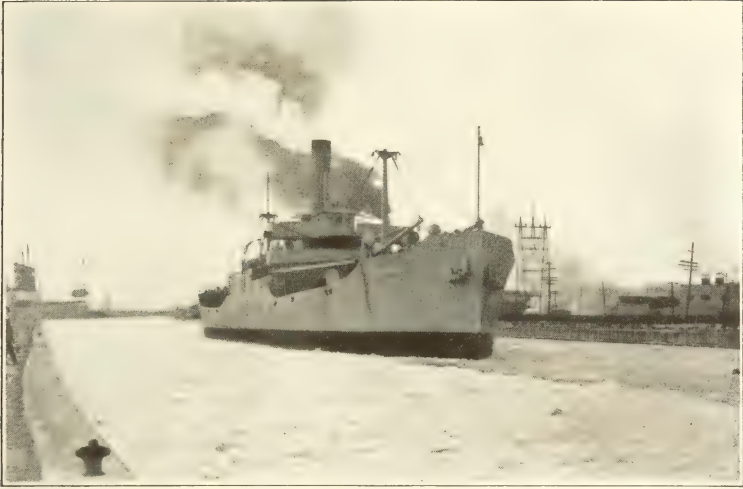
The first coasting arrival from Lower Ports was the steamer "Percesien," which arrived on April 26th. The first trans-Atlantic vessel, the SS. "Cassandra," Capt. Brown, arrived only on May 1st. This record of the opening of navigation is again disappointing, as the River St. Lawrence was practically free from ice and open for navigation any time after April 20th, so that approximately two weeks were again unnecessarily lost to the Port of Montreal in the Spring of 1917.

The close of the season was marked by unusually cold weather. On November 25th, the traditional date of closing the Port, there were in the harbour fifteen ocean-going vessels. There were also thirteen lake vessels being prepared for despatch to Atlantic ocean ports and a number of vessels of the fishing type, built in various Canadian shipyards, being prepared for ocean service.

The last transatlantic mercantile vessel, the S.S. "Manchester Hero," left for sea on November 30th.

Navigation on the St. Lawrence closed on December 7th, when the SS. "War Castle" left for Quebec, and in the Harbour of Montreal on December 11th, when vessels were finally put into winter quarters.

The early cold weather at the close of the season resulted in considerable hardship to a large number of vessels in the Lachine and St. Lawrence Canal System, and also to a large number of vessels in preparation for despatch to the Atlantic Ocean.



Lachine Canal Navigation, December 4th, 1917

As early as November 27th the Government ice-breaking steamer "Lady Grey" was despatched on orders from the Department of Marine and Fisheries to the Three Rivers station, with a view to keeping open the Lake St. Peter Ship Channel, which is affected by ice earlier than other portions of the river. The "Lady Grey" worked steadily from that date until December 9th, and left for Quebec with the last convoy.

On November 26th the ice in the Lachine Canal and at the Lachine entrance began to give serious trouble, and a request was made to the Harbour Commissioners for aid. The Harbour Commissioners' tug "Sir Hugh Allan," which was built for ice breaking, heavy towing, and general work, was not available, having been despatched on Admiralty orders to the Port of Halifax for service during the Winter.

The tug "Alphonse Racine," the next most powerful tug of the Harbour fleet, was laid up for the season. The two tugs available for ordinary ice service, therefore, were the

"Robert Mackay" and the "Aberdeen." From November 26th until December 9th, heavy work was required frequently day and night in order to keep canal navigation moving. The ice in the long reach below Lachine drifted down to Cote St. Paul with the current, due to water power requirements, the two chief points of difficulty being the Cote St. Paul section and the Dam or entrance at Lachine.

The two tugs of the Harbour Commissioners, aided by commercial tugs, and particularly by two powerful tugs of the United States Shipping Board, the "W. P. Saunders" and "Edna G.," kept at the work under seemingly impossible conditions until practically all vessels in the Lachine Canal had passed through. The last two vessels, the "Key Port" and the "Key Vive," finally passed through the last lock and reached the Harbour on December 10th.

The Department of Marine and Fisheries, besides rendering valuable service in aiding navigation on the St. Lawrence by their ice-breaking steamers, took an equal interest in navigation from the Lakes to Montreal. Mr. Alexander Johnston, Deputy Minister, sent special orders to the Harbour Commissioners to aid in every possible way the keeping open of the Lachine Canal to the latest possible date.

The following letters are a record of appreciation of the services rendered to navigation:—

"Montreal, December 4th, 1917.

"Mr. F. W. Cowie, Chief Engineer,

"Harbour Commissioners of Montreal,

"Montreal, Que.

"My dear Mr. Cowie:—

"I enclose herewith copy of report of our Marine Superintendent, Captain H. N. McMaster, whom I called from Kingston last Tuesday to superintend the movement of

“our vessels through the Lachine Canal. This will make
 “clear to you the value of the assistance rendered by your tugs
 “‘Mackay’ and ‘Aberdeen,’ and I wish to add to this my sincere
 “personal thanks to you for the courteous and ready manner
 “in which you came to our assistance at a time when the
 “situation in the canal appeared to be so desperate as to be
 “almost hopeless.

“I am,

“Yours very truly,

MONTREAL TRANSPORTATION CO., Limited,

“(Sgd.) L. L. Henderson.”

“December 4th, 1917.

“Mr. L. Henderson,
 Montreal, Que.

“Dear Sir:—

“As per your request, I left Kingston, Ont., on Tuesday,
 “November 27th, and came to Montreal to see what could
 “be done to relieve a congestion which had occurred with
 “ice forming in the Lachine Canal and blocking our fleet.

“I arrived at Montreal on the 28th, and upon visiting
 “Lachine found the entrance packed with ice and our tugs
 “with their tows having great difficulty to work through it,
 “being assisted by the tug ‘Mackay,’ which was doing good
 “work.

“Upon one of our barges being damaged with the crush
 “in the heavy ice, the tug ‘Aberdeen’ was brought into service,
 “and through the service rendered by this tug we were able
 “to keep the barge from sinking and, after careful handling,
 “the ‘Aberdeen’ breaking the ice and otherwise giving valuable

"assistance, we were able to get the barge to the elevator at
"Montreal.

"On the night of November 30th the ice stiffened up, the
"anchor ice becoming lodged above Cote St. Paul bridge at a
"depth almost to the bottom of the canal, so that on the
"morning of December 1st all traffic was frozen in.

"We had the barges 'Quebec' and 'Brighton' in the above-
"mentioned position, frozen and jammed hard. Efforts of
"other tugs to move the 'Quebec' were given up, and thereupon
"the tug 'Aberdeen' was called into service, and through the
"efforts of this tug the 'Quebec' was released and landed at
"Cote St. Paul lock. The steamer 'Pentland' had then
"become crossways in the canal above the bridge, and the
"tug 'Aberdeen' was again of great service in releasing her.

"The barge 'Brighton' was still fast, but with the assistance
"of the tugs 'Aberdeen' and 'Mackay' we were able to release
"her about 9.30 p.m. and place her at Cote St. Paul lock.

"From then on until December 3rd the 'Mackay' and
" 'Aberdeen' were assisting in breaking the ice, which was
"exceptionally heavy, and in many places the tugs were
"virtually floating in the anchor ice, working against great
"difficulties, and it was only after most constant and dogged
"perseverance by the masters of these tugs that the channel
"was kept open, which enabled us to move our fleet and get
"our last tows clear of ice in the Lachine Canal on December
"4th. The masters of these tugs, 'Mackay' and 'Aberdeen,'
"deserve great credit for services rendered by them.

"Yours truly,

(Sgd.) H. N. McMASTER,

"Marine Superintendent."

VESSELS FROM GREAT LAKES FOR SERVICE ON ATLANTIC

The United States Shipping Board has brought out of the Great Lakes since last summer 48 steamers, aggregating about 150,000 tons.

Twenty-one of the vessels brought to the Atlantic were ships in service on the Lakes and the other twenty-seven were



Great Lakes Vessel having been cut in two so as to pass through the locks of the St. Lawrence Canals, being put together in Montreal Harbour without dry-docking

new vessels commandeered in the yards. Sixteen of the old vessels had to be cut in two in order to get them through the Welland Canal locks, but it was necessary to divide only two of the new ships. The ships were put together again at Montreal, the work having been done under the direction of Engineer F. A. Eustis.

For many years it has been the successful custom to pass vessels through the locks of the St. Lawrence Canals after cutting them in two, the vessels being put together again after passing through the canal system. Vessels built in Great Britain have been despatched to the Upper Lakes and more recently vessels built in the Great Lakes have been despatched to sea for ocean service.

War conditions have resulted in a great demand for tonnage on the ocean, and it has been found that lake vessels are excellent for coasting and cross Atlantic service. A number of vessels were cut in two and brought to Montreal in 1915 and 1916, and put together in dry dock in Montreal. In 1917 the United States Shipping Board requisitioned a large number of vessels on the Great Lakes, having a registered tonnage of about 2,000 tons each, with a view to sending them to the Atlantic. The great trouble was in putting these vessels together at Montreal, the Floating Dry Dock in Montreal Harbour being already taxed to its limits.

The St. Lawrence Canal locks have the following dimensions:---

270 feet long.

44 feet wide.

14 feet depth of water.

Practically, therefore, any vessel on the Great Lakes having a beam of less than 44 feet could be cut in two for Atlantic



Great Lakes Vessel having been cut in two so as to pass through the locks of the St. Lawrence Canals, being put together in Montreal Harbour without dry-docking

service. The Floating Dry Dock of the Canadian Vickers Limited was used when available, but the genius of the staff of the United States Shipping Board evolved a method of putting the vessels together at Montreal without dry-docking. Photographic illustrations show the vessels cut in two and also after being joined together, and this method was quite successful.

The first vessel of this class to arrive in Montreal for being put together without docking was the S.S. "America," which arrived on October 24th. This was followed by others, and some fourteen or fifteen vessels were thus put together and despatched to the Atlantic for ocean service. At one time as many as ten were at various sheltered berths of the Harbour under process of being riveted together.

DEPTH OF WATER FOR NAVIGATION

The average depth of water in the Harbour Channel in—
May was 34'9" or 8" lower than the average for the preceding fifteen years.

June, 34'9" or 6" higher than the average for the preceding fifteen years.

July, 33'5" or 1'3" higher than the average for the preceding fifteen years.

August, 32'3" or 1'1" higher than the average for the preceding fifteen years.

September, 30'11" or 5" higher than the average for the preceding fifteen years.

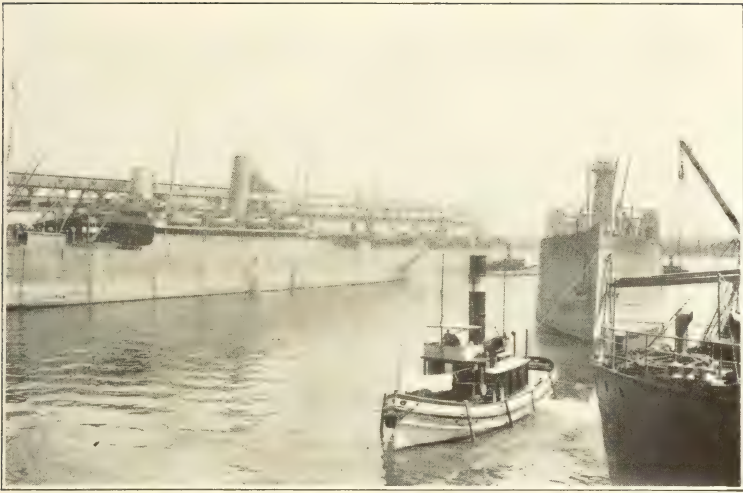
October, 31'0" or 7" higher than the average for the preceding fifteen years.

November, 31'5" or 11" higher than the average for the preceding fifteen years.

The following table gives the average monthly depth of water in the Ship Channel in the Harbour during the season of 1917, as compared with the records of 1916, and also the monthly averages of the depth of water on the old No. 1 Lachine Canal Lock Sill:—

	Depth on old Lock Sill Lachine Canal.		Depth in Harbour Channel.	
	Average 1901-16	Average 1917	Average 1916	Average 1917
May.....	20' 2"	19' 4"	37' 3"	34' 9"
June.....	18'10"	19' 4"	35' 8"	34' 9"
July.....	16' 8"	18' 0"	32' 8"	33' 5"
August.....	15' 8"	16'10"	31' 1"	32' 3"
September.....	15' 0"	15' 6"	30' 2"	30'11"
October.....	14'11"	15' 7"	30' 0"	31' 0"
November.....	14'11"	16' 0"	30' 2"	31' 5"

The water level conditions for 1917 were therefore excellent.



Shipping in Montreal Harbour, August 10th, 1917

SHIPPING

During 1917, 647 sea-going vessels arrived in port, with a tonnage of 2,010,767 tons, as against 698 vessels with 2,134,456 tons in 1916.

Although the showing for 1917 is less than for 1916, 579 trans-Atlantic vessels arrived in the Port, which is the greatest number in the history of the Harbour, the remainder, viz., 68, being vessels from the Maritime Provinces.

The usual tables of vessels arriving in port during the year will be found elsewhere in this report.

CAPITAL CONSTRUCTION WORK, 1917

Progress of Construction Work.

In January, 1917, the Harbour Commissioners held a conference at Ottawa with the Honourable Minister of Marine and Fisheries with reference to the Construction Programme for the year 1917. The Honourable Mr. Hazen stated, after

conference with the Honourable Sir Thomas White, Minister of Finance, that, owing to the very large obligations of the Government and the necessity for strict economy in expenditure, he hoped the Harbour Commissioners could see their way clear to keeping expenditure for 1917 as low as possible in the interests of the work already undertaken, keeping the construction organization together and meeting urgent present requirements.

The capital authorization for 1916 had been \$1,500,000. The actual expenditure for 1916, in view of the wishes of the Government, had been under \$1,000,000. The Minister suggested that the Harbour Commissioners use their judgment and endeavour to make the expenditure for 1917 not more than \$1,000,000 in the general financial interests of Canada.

The Harbour Commissioners accepted this proposition and Mr. Ross gave a brief outline of works proposed to be carried on during the year.

The expenditure on Capital Account in the Harbour of Montreal for the last ten years may be seen from the following statement:—

1907.....	\$1,772,419.66
1908.....	1,619,575.11
1909.....	929,061.71
1910.....	1,454,926.93
1911.....	2,334,119.03
1912.....	2,988,253.22
1913.....	2,461,794.62
1914.....	1,758,368.83
1915.....	1,850,001.40
1916.....	799,346.80
1917.....	422,003.44

It will thus be seen that the Annual Capital Expenditure on Construction Work in Montreal Harbour was reduced in 1917 to the lowest for many years.

The instructions of the Commissioners were to lay up the Commissioners' plant whenever this could be carried out without extreme hardship to old Harbour employees, and with a view to keeping the excellent construction and repair organization together. One dredge was completely laid up and another, with plant, was hired to a contracting firm for the summer.

A contract with the Naval Service Department for two small vessels complete, and the hulls of two others, kept the shipyard and shop organizations going.

The Dredging Fleet, reduced to less than two-thirds of its efficient strength, was worked during day only and at curtailed hours. The only work that was carried on to the full extent of materials and equipment was the construction of high level railways.

Special orders were issued that whenever possible the Harbour Commissioners' construction and repair organization should be used for operating work to aid in the work of unloading, storing, lightering and loading of vessels.

Grain Elevator System.

The only expenditure on Capital Account in connection with the Harbour Commissioners' grain elevator system during 1917 was an amount of \$4,209.31 as final payments on contract, held back until a few minor matters of delayed delivery of specified equipment had been satisfactorily adjusted.

Improvement and Extension to Harbour Railway Tracks.

The largest item of expenditure was for extending the river front embankment and tracks, and for urgently required car storage yards and delivery terminals.

The river front tracks, which had almost reached Longue Pointe Village last year, were continued eastward, and at the close of the season rails were laid down to Section 87 within 4,570 feet of the New Canada Cement Wharf. Next year it is hoped this railway will reach the two most important industrial wharves and plants in the Harbour, viz., the Canada Cement Wharf and the Imperial Oil Wharf.

In the central part of the Harbour more yard room was urgently required, and tracks were laid on several available areas.

Paving.

An amount of \$7,604.32 was expended on paving a portion of the Victoria Pier low level and the approach to the St. Helen's Island Ferry landing.

Victoria Pier and Market Basin.

This has been one of the important items of work for the past five years. The quay walls were practically completed in 1916 and the only expenditure this year was \$2,281.73 for filling and grading.

New Sheds, Sections 24 and 25.

Improvements were urgently required to the water pipes and drainage system, and the cost of this item was \$1,046.99.

WAR ROLL OF HONOUR

Since the war was declared, the Commissioners have encouraged the enlistment of their staff and workmen for overseas service.

In addition to the following on active service, many employees are also serving their country on home service.

Capt. J. J. Symons, R.N.R.	R. H. Dawes.
Sergt.-Major W. J. Porteous.	J. Waine.
P. F. C. Roberts.	T. J. Lilly.
Percy K. Seath.	D. Verville.
G. O. Thom.	W. Waldorf.
A. P. Sibley.	J. Milam.
Geo. McCart.	T. Stewart.
D. McGuirk.	H. Byers.
J. Morrison.	E. Bedard.
J. Querel.	T. Gariepy.
V. Flipping.	J. J. Sweeney.
R. Ponman.	P. J. Gilbert.
J. Fisher.	C. A. Smith.
Nap. Marion.	J. H. Philips.
P. Doyle.	G. McBride.
J. Furlong.	J. F. Fitzgerald.
A. Clark.	J. R. Johnson.
W. Draper.	E. White.

The above are still on active service overseas.

W. Chapman, killed in action, 1915.

P. Fitzpatrick, killed in action, 1916.

F. Sharples, returned to Montreal wounded; given employment.

J. Morrison, returned to Montreal wounded; given compensation.

F. Jones, returned to Montreal after completing service as reservist.

E. Mockridge, returned from active service.

J. W. Sephton, returned after completing service.

Major Kenneth L. Duggan, B.Sc., 5th Mounted Rifles, reported killed in action. Major Duggan was born in 1893, and was educated at St. Albans School, Brockville, and in Switzerland. He graduated in mechanical engineering in 1914 from McGill University, and joined the Harbour Commissioners' Engineering Staff in August of the same year, showing exceptional ability and prospects of a brilliant career. Major Duggan was appointed Major in September, 1916, having enlisted in February, 1915, and was mentioned a number of times in General Haig's despatches.

MAJOR DAVID SEATH

Major David Seath, after a long career as Secretary-Treasurer of the Harbour Commissioners of Montreal, retired during the year. He was succeeded by Mr. M. P. Fennell, Jr., who had been Assistant Secretary-Treasurer for nearly eight years.

FINANCIAL STATEMENT

The Statement of Receipts and Disbursements for the year 1917, hereto annexed, shows Receipts on Revenue Account of \$1,850,646.93, an increase of \$36,773.99 over the previous year.

The cost of Operation, Maintenance, Interest, etc., was \$1,897,393.44, an increase over the previous year of \$120,010.77, leaving a balance to the debit of Revenue Account for the year of \$46,746.51. The interest charges, which amounted to \$892,751.85, show an increase of \$14,394.28 on new loans, due to the continued carrying out of works of improvement.

Statement of Receipts and Disbursements for the Year ended 31st December, 1917.

ITEMS	TOTALS	GRAND TOTALS	ITEMS	TOTALS	GRAND TOTALS
RECEIPTS ON REVENUE ACCOUNT.			DISBURSEMENTS ON REVENUE ACCOUNT		
Grain Elevator System.....	\$616,243.14		Grain Elevator System, Operation and Maintenance.....	\$292,391.95	
Railway Traffic Department.....	363,257.09		Railway Traffic, Operation, Maintenance, etc.....	351,951.25	
Wharfage Rates.....	475,853.91		Harbour Equipment, Operation and Maintenance.....	87,031.42	
Rental of Sheds, Hoists, etc.....	2,000.00		(The above do not cover Interest, Depreciation, Miscellaneous and other Expenses.....		
Rental of Harbour Spaces.....	107,816.37		Police Service on Wharves.....	114,763.21	
Sundry Receipts on Revenue Account.....	65,804.73		Police Service on Wharves.....	37,314.94	
			War Service Allowance and Patriotic Fund.....	16,711.89	
			Sundry Disbursements on Revenue Account.....	79,476.93	
			Reserve Account, for Depreciation, etc.....	25,000.00	
			Total Operation, Maintenance, etc.....	1,004,641.59	
Total Receipts on Revenue Account.....		\$1,850,646.93	Interest on Debentures and Loans.....	892,751.85	
RECEIPTS ON CAPITAL ACCOUNT			Total Disbursements on Revenue Account.....		\$1,897,393.44
Dominion Government Advances under Act 4-5, George V, Cap. 41.....		530,000.00	DISBURSEMENTS ON CAPITAL ACCOUNT		
MISCELLANEOUS RECEIPTS			Richcliffe Pier, New Approach South.....	\$ 62,818.75	
City of Montreal Refund of money advanced for Elgin Basin Pumping Station, 1911, pending judgment of Court.....		75,000.00	High Level Wharves, Sections 25 to 30.....	27,667.00	
Security Deposits received from Contractors.....		3,289.23	Paving Wharves and Piers.....	7,604.32	
Grand Total Receipts.....		2,458,936.16	Windmill Point Embankment.....	2,809.12	
Outstanding Accounts and Accrued Interest as at 31st December, 1917.....	745,764.41		Victoria Pier and Market Basin Wharves.....	2,281.73	
Less:			Water Pipes and Drains.....	1,046.99	
Outstanding Accounts and Interest 1916.....	720,037.83		Harbour Boundaries.....	879.50	
Balance of Outstanding to Add.....		25,726.58	Montreal East Wharf, Sections 109-110.....	594.02	
			Pointe-aux Trembles Wharf, Sec. 100-101.....	496.73	
			Floating Dock Site.....	178.56	
			Wharves, Piers and Basins, Total.....	106,376.72	
			Harbour Railway Tracks and Sidings.....	164,865.66	
			Channel South St. Helen's Island.....	55,200.00	
			Alving Cove Pier.....	2,642.50	
			Moffat's Island Removal, Balance.....	13.70	
			Harbour Dredging, Total.....	57,856.20	
			Real Estate, Hochelaga and Mill Street.....	44,746.55	
			New Harbour Yard Sheds.....	19,460.39	
			New Plant, Flat Scows.....	8,657.62	
			Plant and Buildings, Total.....	28,118.01	
			Electric Hoist No. 5 and Electric Circuit.....	15,641.72	
			Grain Elevator No. 1, West Extension.....	3,503.41	
			Grain Elevator, Marine Tower, Balance.....	705.90	
			Grain Elevators, Total.....	4,209.31	
			Permanent Sheds, Tarte Pier, Balance.....	189.27	
			Total Disbursements on Capital Account.....		422,003.44
			Security Deposits returned to Contractors.....		5,797.43
			Public Debentures Series F, due 5th July, 1917, retired.....		235,000.00
			Grand Total Disbursements.....		2,560,194.31
			Balance at 31st December, 1917.....		
			Bank of Montreal.....		116,564.30
			Cash on hand.....		3,000.00
			Accounts receivable.....		287,825.69
			Materials in stock at 31st December, 1917.....		412,306.59
			Total Balance at 31st December, 1917.....		819,696.58
			Less:		
			Balance at December 31st, 1916.....		895,228.15
			Difference in Balance, to deduct.....		
					75,531.57
					\$2,484,662.74

Certified:

GEORGE F. SMART, Comptroller.

Verified.

limited,
RIDDELL, STEAD, GRAHAM & HITCHISON C.A. Auditors.

Certified:

M. P. FENNEL, Jr., Secretary-Treasurer.

MONTREAL, 1st March, 1918.

There was received from the Dominion Government on loan \$295,000.00, on account of Capital Expenditure for Works of Improvement, and \$235,000.00 to retire Public Debentures, which matured 5th July, 1917.

The Disbursements on Capital Account, in 1917, were \$422,003.44, on the following works of Improvement:—

Harbour Railways.....	\$164,865.66
Wharves, Piers and Basins.....	106,376.72
Harbour Dredging.....	57,856.20
Real Estate.....	44,746.55
New Plant and Buildings.....	28,118.01
Permanent Sheds and Hoists.....	15,830.99
Grain Elevators.....	4,209.31
	<hr/>
	\$422,003.44

The Debenture Debt of the Corporation on the 31st December, 1917, was \$26,842,000.00, of which \$25,805,000.00 is due to the Government and \$1,037,000.00 to the Public.

ENGINEERING DEPARTMENT

The Engineering Department of the Harbour Commissioners of Montreal is organized so as to have charge of varied and important branches, as follows:—

Harbour Construction, Maintenance and Operation.

The construction work, excepting buildings, is almost universally carried on departmentally. The steady growth of the Harbour and the constant yearly effort to keep pace with the commerce has resulted in the Commissioners having a splendid plant for the peculiar construction required. Dredging plant, tugs, derricks, and a shop for repairs, are all kept up-to-date, and the organization for construction is

capable of dredging and placing in the works some two or three million cubic yards of excavated material; of building half a mile of cribwork and concrete quay walls of a height from the foundations to the cope of 60 feet; of building 50,000 cubic yards of concrete, constructing railways, walls, sheds, culverts and, in fact, almost every phase of port construction.

HARBOUR CONSTRUCTION

The following are the chief items of construction for the season:—

The continuation of the construction of New Victoria Pier and Market Basin.

The continuation of the construction of bulkhead high level wharves on the river front, eastwards from Victoria Pier.

General dredging for widening and deepening of basins and berths.

Dredging of channels for the amelioration of St. Mary's Current.

Paving and laying railway tracks on wharves.

The continuation to completion of improvements resulting in the Floating Dock Basin and site for the Canadian Vickers' shipbuilding and repair yard.

The construction and improvement of harbour facilities such as hoists, flood gates, bridges, subways and freight yards.

Additions and improvements to Harbour Commissioners' construction plant.

The completion of a market wharf for Montreal East.

The erection of temporary offices for the United States Shipping Board, on Victoria Pier.

The erection of shed and brick fence at Harbour Yard.

The erection of offices in Shed No. 2.

The maintenance of berths and channels, of wharves, sheds, buildings, roadways, water service, cleaning of wharves and general repairs were carried on as usual.

The improvement and extension of Harbour Railway Terminals.

Temporary sidings were constructed on the new Victoria Pier.

An industrial siding and trestle for the St. Lawrence Sugar Refinery.

Improvements to track scale at Letourneux Ave.

An additional siding at the Harbour Yard.

New railway yard opposite Dry Dock.

Double tracking of section from the Dry Dock to Racine Pier.

New yard and sidings at Longue Pointe.

SUMMARY OF RAILWAY CONSTRUCTION

Earthwork.

Vulcan Wharf to Pointe-aux-Trembles.....	225,000 cu. yds. (In situ)
Racine Pier to Vulcan Wharf...	1,000
Dry Dock to Racine Pier.....	24,000
Railway yard opposite Dry Dock	42,000
<hr/>	
Total.....	292,000 cu. yds. (In situ)

New Tracks.

Vulcan Wharf to Pointe-aux-Trembles.....	7,228 lin. ft.
Hopital St. Jean de Dieu (on Harbour property).....	747
Hopital St. Jean de Dieu (on Communauté property)....	993
Vulcan Wharf.....	253
Dry Dock to Racine Pier.....	1,715
Opposite Dry Dock to Letour-neux Ave.....	1,444
Harbour Yard.....	310
Section 29.....	1,005
Victoria Pier.....	4,377
St. Lawrence Sugar Refinery (on company's property).....	324
<hr/>	
Total new tracks.....	18,396 lin.ft. or 3½ miles

Alterations.

Opposite Dry Dock to Letour-neux Ave.....	7,143 lin.ft.
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Total trackwork.....	25,539 lin.ft. or approximately 5 miles.
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WRECKING AND SALVAGE WORK

The removal of old steamer "St. Louis," which sank at her berth during the Winter.

The salvage of tug "Emma L." from the fairway in the Harbour in September, 1917.

SUMMARY OF DREDGING AND FILLING

Dredging, etc.

In Harbour:

South Channel	70,250 cu.yds. (scow)
Bickerdike Pier Extension . . .	110,200
Entrance to Imperial Oil Wharf at Pointe-aux- Trembles (by No. 3 Dredge M. & F.)	47,325
Maintenance	5,600

Service Channel for Railway Extension:—

By derricks	90,000
By No. 1 Crane	75,000

Material from other sources:—

Dredge No. 3 (M. & F.) Ship Channel, Pte.-aux- Trembles	11,200
P. W. D. Dredge "Interna- tional" at Longueuil . . .	110,900
City contractors	75,000
Ballast from ships, etc.	31,675

Total 627,150 cu. yds. (scow)

Filling.

By derrick:

Guard Pier	12,900
Victoria Pier	900
Shore Wharves	13,500
Dry Dock Yard	56,775
Dry Dock to Racine Pier . .	36,625
Racine to Vulcan	1,350
Vulcan to Pte.-aux-Trembles	193,425
Montreal East Wharf	8,100
Wharf repairs	1,800
Ships ballast in stock	5,100
	<hr/>
	326,475

By dump scows:

Victoria Pier	9,000
Railway embankment	71,750
Imperial Oil Wharf	
Channel to spoil	47,325
Section 30	5,600
	<hr/>
	133,675

By No. 1 Crane (Railway embankment) 75,000

By Carts:—

Victoria Pier	40,000
Shore wharves	35,000
	<hr/>
	75,000

Casting over (service channel

Railway embankment)	17,000
	<hr/>

Total 627,150 cub. yds. (scow)

GRAIN ELEVATOR SYSTEM

The Harbour Commissioners' Elevator System, which includes elevators, conveyor facilities, etc., which commenced in 1904 with an elevator having a capacity of 1,000,000 bushels, reached in May, 1916, two large elevators having a combined capacity of 6,662,000 bushels.

The operation of the elevators during the season was marked by an increase of receipts by cars. Where in 1914 only 13 per cent of the grain received at the Harbour Commissioners' grain elevators arrived by car, and in 1916, 75 per cent, the proportion in 1917 reached 79 per cent.

The use of the Harbour elevators as local marketing and distributing stores has become very much increased in recent years. Deliveries are made by carload, in bulk or in bags, as required, and also by teams to city points.

The receipt of grain by cars required the organization of a gang of grain shovellers, as it requires four car shovellers working half an hour to unload a car of grain. 22,199 cars of grain were received during the season and 2,159 cars were loaded and shipped out.

The operation of the Harbour Commissioners' Elevator System during the season of 1917 may be given as follows:—

Elevator No. 1.

Total storage capacity in bushels, 4,000,000.

First inland vessel unloaded, May 3rd, 1917.

Last vessel unloaded, December 5th, 1917.

Total receipts, 19,017,954 bushels.

By water, 8,170,684 bushels, taken from 78 barges and 86 steamers, or 164 vessels.

By cars, 10,847,270 bushels, unloaded from 7,360 cars.

Delivery was made as follows:—

By conveyors	13,050,873	
By cars	1,253,960	
By teams	460,097	
By bags	4,573,754	
	—————	19,338,684 bushels.

Elevator No. 2.

Total storage capacity in bushels, 2,662,000.

First vessel unloaded, June 1st, 1917.

Last vessel unloaded, Dec. 7th, 1917.

Total receipts, 23,813,550 bushels.

By water, 465,845 bushels, taken from 1 barge and 8 steamers, or 9 vessels.

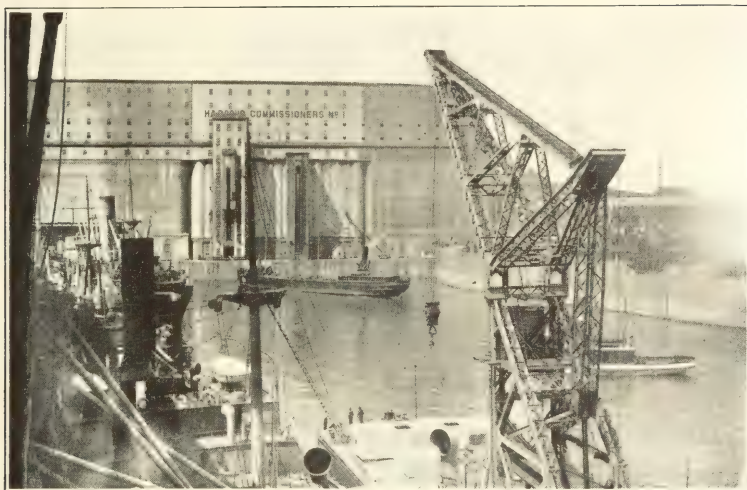
By cars, 23,347,705 bushels, taken from 14,839 cars.

Delivery was made as follows:—

By conveyors	17,629,380	
By cars	1,985,039	
By teams	435,507	
By bags	3,769,689	
	—————	23,819,615 bushels.

At the close of the season, the elevators contained 2,900,224 bushels of grain, subject to storage or delivery as required.

The following table gives the record of the Harbour Commissioners' Elevator System, from 1906 to 1917:—



Shipping in front of Elevator No. 1, August 10th, 1917

TOTAL QUANTITY OF GRAIN HANDLED OR TRANSFERRED

	Bushels
1906.....	944,321
1907.....	1,078,289
1908.....	8,661,350
1909.....	11,691,071
1910.....	21,526,727
1911.....	21,007,164
1912.....	25,561,655
1913.....	44,000,000
1914.....	62,250,000
1915.....	37,317,367
1916.....	51,548,720
1917.....	42,831,504

Floating Grain Elevators.

Total amount of grain transferred or elevated, 18,793 bushels.

One floating elevator only was operated during the season.

Grain Drying.

When Elevator No. 2 was designed, the Corn Exchange represented to the Harbour Commissioners the necessity of a grain dryer, and the installation of a modern plant was cheerfully agreed to.

The grain dryer in connection with Elevator No. 2 has not been a financial success up to date, but as an adjunct to the Grain Elevator System of the Port, it is considered advisable to have it in the interests of the trade.

An instance of the value of this dryer may be realized by an account of the drying of wheat salvaged in the canal at the close of the season of 1917.

The steam barge "India" with 47,627 bushels and the barge "Valencia" with 13,666 bushels, both of wheat, were received late in November. It was first proposed to unload and pile on the wharf for drying, at the rate of about 1,000 bushels per day, and this system was commenced, but it was found that, by proper handling, the grain could be taken through the elevator and stored in special bins. In order to prevent the grain from heating when wet, it had to be run out and re-elevated after airing every day, but the drying process was all completed and the wheat was almost as good as before, there being absolutely no taste or smell noticeable from the sample.

Elevator Facilities, Montreal Harbour.

In the central part of the Harbour, directly adjoining the docks, the Harbour Commissioners have two large modern elevators and the Grand Trunk Railway Company a third.

The capacity of these elevators is as follows:—

Elevator No. 1	4,000,000 bushels.
Elevator No. 2	2,662,000 bushels.
Grand Trunk Elevator	2,150,000 bushels.

Record of Actual Handling Capacity.

Elevator No. 1:—

Received by cars 215,746 bushels in 14 hours.

Received by water 289,885 bushels in 20 hours.

Total in one day 505,631 bushels.

Delivered in one day to vessels, 454,800 bushels; actual working time, 20 hours.

Record of loading ship, S.S. "Torr Head," 164,059 bushels in 8 hours actual working time. There were eight different lots of grain, time being required to make separations.



Unloading Grain from Ocean Vessels at Elevator No. 2, and showing two tramp vessels, one having completed full cargo in 28 hours, and another being loaded at the rate of 600 tons per hour, July 15th, 1917.

Greatest amount in store at any one time, 3,735,212 bushels.

Greatest amount bagged in any one day, 41,411 bushels; working time 14 hours.

Elevator No. 2:—

Received by cars 298,569 bushels in 12½ hours.

Received by water 298,642 bushels in 13 hours.

Total in one day 597,211 bushels.

Delivered in one day to vessels, 678,109 bushels, in 21 hours.

Record of loading ship, S.S. "Crown of Seville," 495,452 bushels oats in 28 hours continuous working time, including trimming on ship.

Greatest amount in store at any one time, 2,458,164 bushels.

Greatest amount bagged in any one day, 43,764 bushels.

It will be seen that by actual record the two Harbour Commissioners' elevators are capable of unloading from cars and vessels in one day of 24 hours, 1,000,000 bushels, and delivering to ships in the same time, 1,000,000 bushels, the Grand Trunk Railway elevator also having a large capacity for handling, in addition to the Commissioners' elevators.

HARBOUR RAILWAY TERMINALS

Winter Operations.

The Winter season of 1917 was a very satisfactory one, the traffic returns showing an increase of three per cent over the same period in 1916, which had been, by a large margin, greater than any other year. During the four months prior to the opening of navigation, we recorded a daily average handling of 335 cars, derived from practically the same sources as during the past two years, viz.:—Grain shipments to and

from Elevators Nos. 1 and 2, and hay shipments to and from Shed No. 25, and local and interchange traffic.

Car Handling.

In anticipation of an exceedingly busy season of navigation, traffic regulations were put into force with a view of expediting to the maximum degree the handling of overseas traffic, and for the first part of the season the volume of traffic was such that the record established in 1916 had been surpassed. From about August 1st, however, traffic fell off considerably, decreasing month by month, until by the end of the year the early increase in the traffic returns had been reduced to below the figures of 1916, and for the entire year the total car handling shows a decrease of more than 19,000 cars, or 10 per cent, in comparison with last year. While the decrease is not solely the result of the falling off of overseas traffic, two factors stand out pre-eminently as being accountable for the difference in the volume of traffic: the closing down of the hay compressing plant at Shed No. 25 for practically the whole season, and the reduction of traffic to and from certain industries previously occupied in the manufacture of munitions. One such industry adjoining the Harbour, which in 1916 had received from and shipped by the Harbour Terminals more than 11,000 cars, reduced this number to less than 6,000 cars this year.

As expected, the new connection between the Montreal Tramways Company and the Harbour Terminals at Sections 71-72 resulted in a considerable increase in traffic from this source, the number of cars handled in 1917 being three times as great as in 1916, and a further increase may be confidently looked for as the industries that are the source of this business are developed to their capacity.

The two locomotives purchased by the Commissioners in the Fall of 1916 were put into service at the opening of the season of navigation, and with the other locomotives, which as in the former years had been thoroughly overhauled in the Commissioners' Engine House during the winter months, furnished the necessary motive power to handle the season's traffic without delay.

If we except the progress made on the railway embankment from Section 75 eastward, about a mile of which was completed this year but not turned over to this department for operation, no construction work or improvements of any importance affecting the railway traffic were completed during the year.

Growth of Railway Department.

From the following statement, showing the number of cars handled yearly since the department was organized in 1907, it will be observed that the growth of railway traffic in this Port has been continuous, and the Commissioners feel that they can still confidently look for increased railway business. The railway operations are carried out under the directions of Mr. John Vaughan, Superintendent.

1907.....	70,856
1908.....	60,266
1909.....	75,636
1910.....	79,466
1911.....	93,859
1912.....	112,911
1913.....	114,531
1914.....	114,449
1915.....	157,480
1916.....	234,439
1917.....	215,394



Sheds Nos. 24 and 25. Upper storey loaded with flour ready for shipment. Total in picture 15,000 tons, July 24th, 1917

Traffic at Sheds.

Notwithstanding the decrease in import freight, 43,745 cars were handled during 1917 directly to and from the sheds, as compared with 51,576 cars in 1916.

Extent of Harbour Railway Tracks.

The extent of the Harbour Commissioners' Railway Tracks at the end of 1917 is as follows:—

1. South of Lachine Canal, Bickerdike
Pier, Windmill Point Wharf and
West.....27,759 lin.ft. or 5.2574 miles.
2. Sections 12 to 46, High Level, Main
Line track.....51,170 lin.ft. or 9.6913 miles.
To piers, elevators, crossovers and
sidings, etc.....97,333 lin.ft. or 18.4342 miles.
Sections 35 to 46, Low Level, Main
Line tracks.....12,150 lin.ft. or 2.3011 miles.
Sections 46 to 87, High Level, Main
Line tracks.....37,438 lin.ft. or 7.0905 miles.
3. To wharves, industries, etc.....37,845 lin.ft. or 7.1676 miles.
4. To Guard Pier.....10,400 lin.ft. or 1.9697 miles.
5. South Shore, St. Lambert.....2,300 lin.ft. or 0.4356 mile.

Grand total tracks on Harbour in use end
of 1917.....276,395 lin.ft. or 52.3474 miles.
Grand total tracks on Harbour in use end
of 1916.....259,316 lin.ft. or 49.1128 miles.

THE FLOATING CRANE

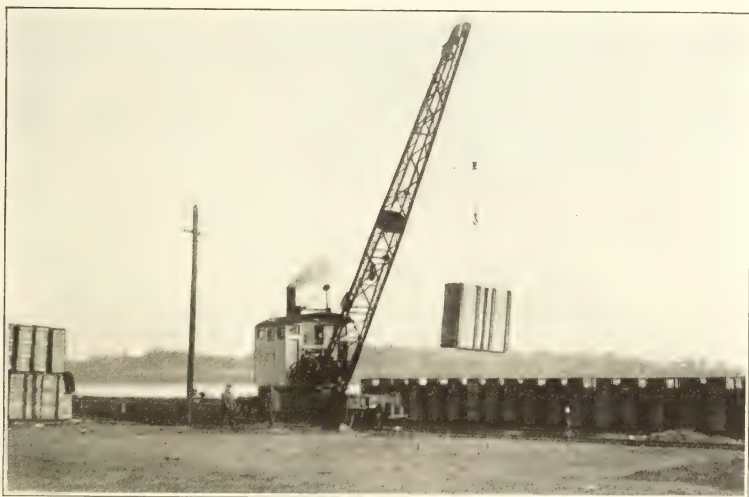
The Harbour Commissioners' Floating Crane was operated throughout the season, as compared with 1916, as follows:—

	1916	1917
Number of working days.....	201	202
Number of days working.....	106	176
Number of hours working.....	1,067	1,326
Percentage of time in actual operation.....	52%	87%
Total Number of Lifts:		
Commercial.....	694	1,763
Commissioners' service.....	66	64
Average Weight of Lifts:	Tons	Tons
Commercial.....	28	8
Commissioners' service.....	23	20
Greatest Lift:		
Commercial.....	70	75
Commissioners' service.....	70	60
Greatest Tonnage from Single Ship:		
Ex S.S. "Pretorian".....		206½
Ex S.S. "Manchester Inventor".....	557	
Total weight lifted (tons).....	21,082	15,142

LIGHTERAGE

The lightering of goods had in view the release of railway cars and the extra despatch given in loading of vessels. The system was found successful, and, in view of the value of cars and of despatch to vessels, an economical measure.

For packages or goods which could be unloaded and stored on open quays, the system was found to be excellent, and it is to be regretted that large shipments of railway materials were, early in the season, arranged to be sent to other ports in fear of congestion in the Montreal Harbour Terminals. Several ship loads of standard narrow gauge steel artillery wagons were handled by this method, as well as several ship loads of knocked-down railway cars for France. Large quantities of hay were lightered, and for a commencement, the use of the Harbour Commissioners' cranes, derricks, barges and tugs were found to give excellent operating service.



Lighterage and Freight Handling Equipment
Handling packages of car parts by locomotive crane, for loading into vessels and shipping to France. November 9th, 1917



Harbour Commissioners' Lighterage and Freight Handling Equipment
November, 1917

ELECTRICAL BRANCH

Power and Operation.

The Harbour Commissioners purchased electric power from the Montreal Light, Heat and Power Co. for their power requirements, as follows:—

	H.P. Hours
Elevator No. 1	1,103,924
Elevator No. 2	1,019,670
Conveyor Galleries	524,574
Electric Hoists	102,504
Electric Escalators	639
Hay Presses, power and lighting	469,248
Harbour Yard and Machine Shop	73,531
Electric lighting, general	644,720

Freight Hoists in Connection with Transit Sheds.

Hoist No. 1, Sheds Nos. 11 and 12:

	1916	1917
Total number of teams carried..	7,910	7,960
Number of days in operation...	192	184
Commenced operation.....	May 1st	April 30th
Stopped operation.....	Dec. 9th	Dec. 1st

Hoist No. 2, King Edward Pier:

Total number of teams carried..	11,429	11,283
Number of days in operation...	190	184
Commenced operation.....	May 1st	May 1st
Stopped operation.....	Dec. 9th	Dec. 2nd

Hoist No. 3, Alexandra Pier:

Total number of teams carried..	29,928	27,358
Number of days in operation...	203½	199
Commenced operation.....	April 17th	April 16th
Stopped operation.....	Dec. 9th	Dec. 2nd

Hoist No. 4, Jacques Cartier Pier.

Total number of teams carried..	12,235	3,548
Number of days in operation...	190	187
Commenced operation.....	May 1st	April 23rd
Stopped operation.....	Dec. 7th	Dec. 2nd

Hoist No. 5, Sheds Nos. 24 and 25.

Total number of teams carried..	504	5,099
Number of days in operation...	42	88
Commenced operation.....	May 1st	May 1st
Stopped operation.....	Dec. 2nd	Dec. 1st

(Hoist transferred to Alexandra Pier 1917)

General.

The freight hoists did good service throughout the season.

Hoist No. 5 was dismantled at Shed No. 24 on June 1st, removed to Alexandra Pier to help out No. 3 Hoist and in full operation August 20th. These two hoists took care of all the freight elevated to the upper floors of Sheds 2, 3, 4, 5 and 6. These sheds were especially busy as all overseas freight handled by the Overseas Transport was conducted through these Sheds.

The outside lighting, composed of flame arcs and powerful nitrogen units, was maintained throughout the season and gave good service.

The freight escalator in Shed No. 16 was used for a great variety of freight by the Hudson's Bay Company and gave good service.

The electrical equipment of the head office, the dredging fleet, transit sheds, grain elevators, freight hoists, engine shops and sub-stations was maintained and improved, the operating staff carrying on the service without any delays or accidents.

SAWMILL AND TIMBER BOOM

The sawmill worked 165 days during the season, sawing hard and soft wood, the total amount sawn being 2,306,403 feet B.M.

The total amount planed was 567,890 ft. B.M.

The total timber and lumber delivered to works during the season was 1,086,262 feet B.M. and 227,756 feet, lineal.

Total delivered to outside firms 600,809 feet B.M.

MISCELLANEOUS

Wharf Accommodation.

The extent of the wharves and piers at the end of the season is as follows:—

For 30 ft. draught at O.L.W. and over	.25,905 lin.ft. or 4.9062 miles.
For 25 to 27 ½ ft.	13,442 lin.ft. or 2.5458 miles.
Total deep draught.	39,347 lin.ft. or 7.4520 miles.
For 20 ft. draught and under.	3,105 lin.ft. or 0.5880 miles.
Total wharfage end of 1917.	42,452 lin.ft. or 8.0400 miles.

Construction Materials.

The quantities of materials used during the season were:—

Cement.	18,579 bags.
Rubble stone.	551 tons.
Sand.	2,595 cu. yds.
Crushed stone.	4,135 tons.
Railway ties.	16,224 pieces
Timber, 1,086,262 ft. B.M., and 22,756 lin.ft.	
Stone for macadamizing.	564 tons.

THE LABOUR SITUATION

Too much praise cannot be extended for the splendid services of the superintendents, foremen and men who have, during the past season, carried on the work in the Port so efficiently.

Many times, when vessels were bunched and despatch urgent, the men worked almost continuously until the vessels were loaded.

The Harbour employees, both in the construction and operating departments, worked well and faithfully, and the business of the Port was carried on according to the usual regular methods.

The following table shows the maximum and average number of workmen employed by the Harbour Commissioners during the season of 1917:—

	Maximum Average	
Maintenance of Harbour.....	173	124
Police.....	65	58
Construction of wharves, tracks, etc....	254	188
Harbour Yard, carpenters, blacksmiths, etc.....	28	26
Sawmill and timber boom.....	30	26
Round House, machinists, etc.....	23	20
Machine Shop.....	84	72
Shipyard.....	76	52
Dredging Fleet: dredges, tugs, etc., crews	170	145
Operation:		
Elevator No. 1.....	61	57
do baggers.....	90	36
Elevator No. 2.....	75	62
do baggers.....	51	29
Conveyor Galleries.....	41	39
Floating Elevators.....	6	6
Electrical department: hoists, etc....	26	24
Traffic Department.....	97	89

TUG SIR HUGH ALLAN

At the beginning of the season of navigation, arrangements were made to use the "Sir Hugh Allan" as a guard boat. A machine gun was mounted forward, and was in charge of three men from the Composite Regiment.

During the day the boat was employed in her usual work, while patrolling the Harbour at the same time, but during the night moored at Victoria Pier in such a position as to command a view of the whole Harbour, and helped to enforce the regulations restricting pleasure craft, motor boats, etc., to certain limits.

Practically all the moving of the floating crane was done during the season by the "Sir Hugh Allan."

Towards the end of the season, arrangements were made to lease this vessel to the Overseas Transport Service for work at Halifax during the Winter.

To render her more seaworthy, the boat deck and after mast were removed, and the life boats and davits placed on the main deck.

The "Sir Hugh Allan" left Montreal Harbour on November 22nd, towing a Standard Oil barge, both tug and barge arriving safely at their destination. This tug was at Halifax at the time of the disaster and fortunately escaped damage, and was able to render very useful service.

POLICE DEPARTMENT

Organized in 1913, the Harbour Police Force, consisting in 1917 of 5 officers and 59 constables, all uniformed and armed, regulates the traffic on the wharves, maintains order and protects life and property within the Harbour.

Following the rule established on the declaration of war, at the beginning of August, 1914, admission to the Harbour during the past year was restricted to persons holding special passes issued by the Commissioners, which necessitated the placing of police guards at all entrances, their principal duties being to ward off undesirables or suspicious characters, as well as to regulate vehicular traffic at these points. The utility of their efforts in this direction may be judged from the fact that no accident, even of a minor nature, occurred on that portion of the Harbour under their care, notwithstanding the free movement of railway and vehicular traffic.

The services of 18 Harbour constables were continuously at the disposal of the various shipping companies during the season.

204 persons were arrested and brought before magistrates and recorders for different minor offences during the season.

MAINTENANCE

Wharves.

As usual, repairs were required in connection with the old style wooden wharves, the most important items of work done being the following:—

1. Removal and rebuilding of about 4,800 cu.ft. of cribwork and forming a new boat stair at foot of Lock No. 1.
2. Removing and rebuilding about 64,000 cu.ft. of cribwork between Locks 1 and 2, about 21,000 ft. B.M., of sheeting and planking being renewed.
3. Renewal of cope, ties and planking at Lock No. 2.
4. Rebuilding and filling with rock, for depths from 2 to 6 ft. of the greater part of the old wharves from Sections 34 to 42, roughly from Longueuil Ferry to Laurier Pier.
5. Sundry repairs at Longueuil Ferry Slip, Sutherland and Laurier Piers, and at the Government wharf at Longueuil.
6. Repair of damages to wharf at Shed No. 12 by S.S. "Scandinavian" last year, and charged to Shipping Company.
7. The replacing of mooring posts, fenders, etc., principally at ferry landings on both sides of the river.

Dredging and Sweeping.

The usual tests of the Ship Channel were made and a few spots were detected between Sections 15 and 18. These, however, though trifling, were speedily removed. The sweeping of Windmill Point Basin, however, revealed a good deal of deposit on the South side, partly sewage and probably partly spill at the coal berths and refuse from ships. This also was cleared away, the area covered being fully $1\frac{1}{2}$ acres. No dredging was done at Elgin Basin Sewer this year, although very urgently required, vessels occupying the berths until the dredges were laid up.

General Maintenance.

All drains, manholes, etc., were kept clear and were flushed. The old drains in Sections 14 and 18 gave the usual trouble, it being found on examination that in places they had collapsed and completely blocked. These were removed in part and the whole completely cleaned out, while some small additional subsidiary drains and catchpits were constructed for the better drainage of the railway tracks.

The water supply was maintained in good order, and 32 hydrants and 15 latrines were in service.

The supply of water to ships again showed as a considerable item, 153 large vessels being supplied with an aggregate of 568,656 cu.ft. of water during the season.

Sheds and Elevators.

The almost prohibitive price of steelwork resulted in shed renewals being cut down to absolute minimum; nevertheless 1,300 lin. ft. of new gutter had to be erected, and the roofs and floor slabs were maintained in good repair, and the usual amount of painting was done.

Beyond the maintenance from wear and tear there were no repairs of note in the elevators or conveyors, except the strengthening, by sheeting with timber, of four boot tanks in Elevator No. 1.

Railways.

The increase in mileage for the year was about $3\frac{1}{2}$ miles, making a total of about $45\frac{1}{2}$ miles of track that has to be maintained. This department becomes more important each year, and a constantly increasing gang of section and maintenance men were employed from one year's end to the other, repairing slip diamonds, renewing ties, rails, switches, etc., and surfacing in general. During the past year no fewer than 5,300 ties were renewed and 400 lin. yds. of rail replaced,

and it reflects credit on all concerned that in spite of the enormous tonnage handled per mile, no mishap of any consequence occurred to traffic during the year.

Roads, etc.

The scavenging, watering and upkeep of paved, Tarvia, Rocmac, asphalted and ordinary macadamized roadways required the constant vigilance of about 35 men, who succeeded in keeping the wharf surface in very creditable condition.

Life Saving Equipment.

Every precaution was taken to facilitate the saving of life and the prevention of accident, by the erection of railings and the distribution of ropes, gaffs and life preservers at 169 different points along the wharf front.

Raceways at Windmill Point Basin.

Fortunately no further breaks of a serious nature have occurred during the year, no reconstruction was undertaken and no further temporary measures were necessary. The condition of these raceways, however, is such that deterioration goes steadily on, and the state of dilapidation becomes more pronounced every day.

City Sewers.

City sewers crossing the wharf have occasioned much trouble, exasperation and anxiety during the year.

On 12th June, after heavy rain, the old Delorimier Sewer collapsed under the Harbour Commissioners' high level tracks, putting both lines out of business, and necessitating the construction of two pile trestles over the break, and the laying down of a third track to maintain the traffic pending reconstruction of the sewer by the city authorities, which they immediately commenced. By the close of the season the old timber sewer was completely replaced by a modern brick sewer and the break in the embankment filled and protected for the winter. From reports and observation of overflow

at a manhole on the wharf, it was suspected that the sewer outlet opposite Nicolet Street was blocked. A trial pit sunk immediately at the back of the high level quay wall over the sewer, disclosed the fact that a small portion of the sewer had partially collapsed owing to the excessive flow.

In August, another break of a minor character occurred in the Desery Street sewer near the subway. This was reconstructed by the city authorities, and an entirely new sewer is in process of construction across the wharf to replace the existing one.

General.

The usual force of watchmen was employed to protect the property of the Commissioners, to guard the public from accident and to regulate the Harbour dumping ground.

The break-up last spring left considerable quantities of ice on the wharves, and such portions as were immediately required were cleared. Damage by ice shove was also considerable in the old wooden wharves, as already described.



German mine-laying submarine UC-5, re-christened "U-buy-a-Bond." Brought to Montreal to promote the Victory Loan Campaign, November, 1917

LIST OF HARBOUR COMMISSIONERS DREDGING PLANT, 1917.

Description of Vessel	Hull.			When built	Engines.				Capacity of Bucket c.v.	Depth to which Dredge can work	Remarks	
	Length	Breadth	Depth		Kind of Engine	No. of cylin- ders	Dia. of cylin- ders	Length of stroke				Pres- sure of steam
Dredges.												
Boom Spoon Dredge J. Kennedy	90	0 36	0 10	3	1892	{ 2 2 2 2 }	16	18	128	7	40	Wooden hull.
" " " No. 4	90	0 36	0 10	9	1900		16	18	140	7	40	Steel hull.
" " " No. 5	104	0 36	0 10	9	1910		16	18	140	7	40	Steel hull.
" " " No. 6	104	0 39	0 10	9	1912		16	18	140	7	50	Steel hull.
Elevator Dredge "Premier"	86	0 31	5 9	2	1905	{ 2 2 2 2 }	14	15				Wooden hull.
Derricks.												
Clam shell Derrick No. 1	76	0 27	6 8	0	1899	{ 2 2 2 2 }	12	14	110			Wooden hull.
" " " No. 2	80	0 30	0 7	6			10	12	120			Wooden hull.
" " " No. 3	76	0 27	6 8	0	1900		12	14	110			Wooden hull.
" " " No. 4	75	0 26	10 7	6	1892		12	14	110			Wooden hull.
" " " No. 5	75	0 26	10 7	6	1892	{ 2 2 2 2 }	12	14	110			Wooden hull.
" " " No. 6	75	0 26	10 7	6	1892		12	14	110			Wooden hull.
" " " No. 7	88	0 31	0 9	0	1913		12	14	140			Wooden hull.
" " " No. 8	88	0 31	0 9	8	1915		12	14	140			Wooden hull.
Drilling & Blasting Boat	80	0 27	0 5	6	1895	{ 2 2 2 2 }	12	14	100			Three 5 in. steam drills.
Drill Boat No. 1	60	0 20	0 5	0	1909				80			Two 5 in. steam drills.
Tug Boats.												
Tug "St. Peter"	74	8 16	1 8	6	1875	1	20	22	125			Wooden hull. Rblt. 1903
" " "Courier"	36	9 9	3 6	2	1900	1	10	12	125			Composite hull.
" "Aberdeen"	79	3 18	3 9	0	1895	{ 1 1 1 1 }	16 32 16 32	24	120			Steel hull.
" "Robert Mackay"	80	9 17	6 10	0	1899	{ 1 1 1 1 }	16 32 16 32	24	125			Steel hull.
" "Alphonse Racine"	90	0 18	6 12	1	1905	{ 1 1 1 1 }	16 32 16 32	24	150			Steel hull.

" No. 1	90	0	26	0	6	0	Rebt. 1893	Horizontal non- condensing	1	15	20	100	{Iron sheathed with elm. Formerly Floating Ele- vator, No. 1.
" "Sir Hugh Allan"	130	0	26	6	15	0	1911	Vertical triple expansion condensing	1	16	24	180	Steel hull, twin screws.
" "Hon. John Young"	91	8	22	0	9	0	1911	Vertical compound condensing	1	12	18	140	Steel hull, twin screws.
" "Beaver"	64	3	15	3	7	3	1892	Vertical high pressure	1	18	20	115	Wooden hull.
" "Passe-Partout"	49	1	11	3	5	7	1912	Vertical high pressure	1	9	10	125	Wooden hull.
" "David Seath"	75	0	19	0	10	2	1915	Vertical condensing	1	13	22	150	Wooden hull.
Testing boat.....	{73 73	3 3	14 14	0 0	3 3	1 1	1897	Capacity.	1				Two wooden scows braced 16 ft. apart.
Scows.													
2 Flat deck scows Nos. 2 & 4	75	0	20	2	6	0	1876	67½ yds.					
1 " " No. 10	90	0	20	0	5	5		80 "					
2 " " Nos. 21 & 22	85	0	25	0	7	5	1891	150 "					
2 " " Nos. 23 & 24	85	0	25	0	6	9	1891	150 "					
5 " " Nos. 25-29	85	0	25	0	6	9	1892	150 "					
5 " " Nos. 31-35	85	0	25	0	6	9	1893	150 "					
2 " " Nos. 39 & 40	85	0	25	0	6	9	1903	150 "					
2 " " Nos. 41 & 42	87	0	25	0	7	6	1904	150 "					
12 " " Nos. 43-54	100	0	30	0	9	0	1911-15	300 "					
2 Dump scows, Nos. 36 & 37	106	0	26	10	9	6	1899	200 "					
1 " " No. 38	106	0	26	10	9	6	1900	200 "					
2 " " (Gilbert's)	60	0	20	0	6	0		100 "					
1 large coal scow	138	0	32	0	8	5		400 tons.					
1 floating concrete machine	100	0	34	0	8	6	1915						
1 floating pile driver	50	9	24	2	5	8	Rebt. 1896						
1 floating air plant.....													{ Converted floating grain elevator.

HARBOUR DREDGING

Statement showing the number of days worked by each Dredge and the quantity dredged at each place in 1917

Name of Dredge	Places at which dredging was done	Time of Service		Quantities dredged		Character of material dredged
		Days	Total	Cu. yards	Total yds.	
Dredge "John Kennedy".	New Channel South of St. Helen's Island..... Raising tug "Emma L." ..	138 5	143	70,250	70,250	Hard pan and stones.
Dredge No. 4.....	Extension of Bickerdike Pier..... Raising tug "Emma L." ..	110 $\frac{3}{4}$ 3 $\frac{1}{4}$	114	79,898	79,898	Rock.
Dredge No. 5.....	South Bickerdike Pier.... Maintenance dredging....	41 1	42	28,400 400	28,800	Rock. Loose rock and mud.
Dredge No. 6.....	Maintenance dredging.... South Bickerdike Pier.... Lauzon Dry Dock..... Breaking up old barge....	14 $\frac{1}{2}$ 5 $\frac{1}{2}$ 120 2	142	5,200 1,900 74,020	81,120	Loose rock and mud. Rock. Rock.
Government Dredge No. 3	Totals..... Opposite Pointe-aux-Trembles.....	66	441 66	49,325	260,068 49,325	Clay and stones.
	GRAND TOTAL...		507		309,393	

PORT OF MONTREAL.

Combined Statement showing the Number and Tonnage of all Vessels that arrived in Port during the past Ten Years

Year	TRANS-ATLANTIC		MARITIME PROVINCES		INLAND		GRAND TOTAL	
	Vessels	Tonnage	Vessels	Tonnage	Vessels	Tonnage	Vessels	Tonnage
1908.....	364	1,315,688	375	642,916	12,434	3,589,124	13,173	5,548,028
1909.....	371	1,436,963	299	474,450	10,991	3,146,494	11,661	5,057,907
1910.....	411	1,658,414	336	574,808	13,636	4,327,799	14,383	6,561,021
1911.....	401	1,695,613	361	642,639	11,670	4,275,019	12,432	6,613,271
1912.....	409	1,775,487	327	628,437	12,586	4,649,767	13,322	7,053,691
1913.....	477	2,020,333	343	670,202	13,426	5,703,467	14,246	8,394,002
1914.....	551	2,039,133	365	716,385	12,225	6,288,939	13,141	9,044,457
1915.....	484	1,657,728	331	603,546	8,572	4,222,426	9,387	6,483,800
1916.....	569	1,965,161	129	169,295	7,297	3,558,872	7,995	5,693,328
1917.....	579	1,984,233	68	26,534	6,274	3,206,542	6,921	5,217,309

PORT OF MONTREAL.

Statement showing the Classification of Trans-Atlantic Vessels that arrived in Port during the past Ten Years.

Year	Steamship		Barques		Ships and Brigs		Schooners		Grand Total	
	No.	Tonnage	No.	Tonnage	No.	Tonnage	No.	Tonnage	Vessels	Tonnage
1908.....	364	1,315,688	..	.....	..	.....	..	.....	364	1,315,688
1909.....	371	1,436,963	..	.....	..	.....	..	.....	371	1,436,963
1910.....	410	1,656,794	..	.....	1	1,620	..	.....	411	1,638,414
1911.....	401	1,695,613	..	.....	..	.....	..	.....	401	1,695,613
1912.....	409	1,775,487	..	.....	..	.....	..	.....	409	1,775,487
1913.....	477	2,020,333	..	.....	..	.....	..	.....	477	2,020,333
1914.....	551	2,039,133	..	.....	..	.....	..	.....	551	2,039,133
1915.....	483	1,656,634	..	.....	1	1,094	..	.....	484	1,657,728
1916.....	569	1,965,161	..	.....	..	.....	..	.....	569	1,965,161
1917.....	579	1,984,233	..	.....	..	.....	..	.....	579	1,984,233

PORT OF MONTREAL.

Statement showing Classification of Vessels that arrived in Port, for the past Ten Years, from the Lower St. Lawrence and Maritime Provinces.

Year	Steamships		Schooners		Grand Total	
	No.	Tonnage	No.	Tonnage	No.	Tonnage
1908.....	350	640,244	25	2,672	375	642,916
1909.....	273	470,936	26	3,514	299	474,450
1910.....	306	572,022	30	2,786	336	574,808
1911.....	330	639,752	31	2,887	361	642,639
1912.....	292	625,099	35	3,338	327	628,437
1913.....	299	666,053	44	4,149	343	670,202
1914.....	321	712,327	44	4,058	365	716,385
1915.....	312	601,916	19	1,630	331	603,546
1916.....	97	165,473	32	3,822	129	169,295
1917.....	34	23,635	34	2,899	68	26,534

PORT OF MONTREAL.

Statement showing the Nationalities and Tonnage of Sea-going Vessels that arrived in Port, during the season of 1917, that were navigated by 44,410 seamen.

Nationality	Number of Vessels	Tonnage
British.....	567	1,881,755
Italian.....	1	1,690
Norwegian.....	3	5,445
American.....	58	90,171
Danish.....	1	1,377
French.....	1	1,220
Belgian.....	15	26,818
Greek.....	1	2,291
Total.....	647	2,010,767

Of the above, 613 were of iron or steel, with a tonnage of 2,007,868, and 34 were built of wood, with a tonnage of 2,899 tons.

PORT OF MONTREAL

Statement showing the dates of the Opening and Closing of Navigation, the First Arrival and the Last Departure for sea; also the Greatest Number of Vessels in the Port at one time, during the Past Ten Years.

Year	Opening of Navigation	Closing of Navigation	First Arrival from Sea	Last Departure for Sea	Greatest number of Vessels in Port at one time.				
					Seagoing		Inland		
					No.	Date	No.	Date	
1908.....	April 22nd	Dec. 10th	April 30th	Nov. 26th	24	June 21st	104	June 30th	
1909.....	" 16th	" 27th	" 23rd	" 28th	22	Nov. 9th	107	Aug. 31st	
1910.....	" 1st	" 7th	" 11th	Dec. 1st	25	May 18th	122	Sept. 18th	
1911.....	" 23rd	" 29th	" 26th	" 3rd	24	Aug. 18th	85	June 5th	
1912.....	" 23rd	" 21st	" 30th	" 3rd	22	July 31st	86	Aug. 21st	
1913.....	" 9th	" 27th	" 19th	Nov. 29th	29	Oct. 3rd	92	July 25th	
1914.....	" 22nd	" 15th	" 29th	Dec. 4th	56	Aug. 21st	94	Aug. 17th	
1915.....	" 11th	" 15th	" 30th	" 11th	34	Sept. 21st	66	July 26th	
1916.....	" 22nd	" 18th	May 1st	" 6th	41	" 12th	62	" 25th	
1917.....	" 19th	" 7th	" 1st	" 7th	37	Nov. 12th	52	Sept. 11th	

